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A vehicle with a frame support

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Description

SUB A3> This invention relates to a vehicle according to the preamble of claim 1.

BB - The invention relates in particular to vehicles with a superstructure having not only the mast and its slewing gear and the frame support but also further apparatuses, preferably a concrete pump with the subassemblies necessary for its operation. Such vehicles differ in, among other things, the outreach of the mast to which the concrete delivery pipe is connected in the case of concrete pumps. The invention relates in particular to such vehicles with comparatively small outreaches of the mast and a generally simple construction resulting therefrom.

For such vehicles one uses, if possible, standard truck undercarriages whose chassis is only slightly modified or strengthened but is given a frame for the superstructure. The tilting moments arising through the overhang of the mast are removed by the frame support on the base of the vehicle. Since the mast swivels fully in both directions if the slewing gear rotates about an arc, one requires front and back frame supports for its utilization. This results in a two-point support on each side of the vehicle.

SUB A4> The tilting moments from the mast regularly make it necessary to provide the support outside the vehicle profile, while this profile must be maintained for the driving mode. Although the tilting moments toward the front and/or back are less problematic about the transverse axis of the vehicle than about the longitudinal axis of the vehicle, tilting moments about the longitudinal vehicle axis are unavoidable in most cases. This results in outreaches of the frame support disposed outside the vehicle profile in the extended state even in vehicles of the above-described simpler construction.

According to the invention the frame support is effected with the aid of jibs executed as movable telescopes so that they can be accommodated in the associated stationary telescopes within the vehicle profile in space-saving fashion for the journey and be extended to the required length for operating a concrete pump for exam-

ple. According to the invention the stationary telescopes are disposed at least partly in an arc tangentially to the longitudinal direction of the vehicle and extend in each case from one of the long sides of the vehicle profile inward substantially as far as the middle of the vehicle and then on to the same long side of the vehicle profile. This permits the space within the vehicle profile to be fully utilized on both long sides of the vehicle, which has an advantageous effect on the span and length of the jibs.

Sub A5 B1 Such vehicles are known in the art (DE 43 44 779 A1). The stationary telescopes of each side of the vehicle are executed here separately from each other in carriers and disposed on the vehicle frame either one above the other or concentrically to each other. This leads to a considerable space requirement on both sides of the vehicle and also to additional technical effort due to the separate fastening of each stationary telescope to the vehicle frame, one consequence being an increase in vehicle weight, which is already substantially exploited by the heavy superstructure.

Sub A6 The invention takes a different path, its basic idea being rendered in claim 1. Further features of the invention are the subject of the subclaims.

The invention is based on coordinating the maximum spans with the available length of the vehicle, thereby permitting the span of the movable telescopes to be sufficiently large, while the length of the vehicle regularly enlarged by the superstructure permits them to be accommodated on both long sides of the vehicle within the vehicle profile in such a way that the movable telescopes are disposed one behind the other within a common plane. The invention thus makes it possible to accommodate the two movable telescopes associated with each long side of the vehicle within a common stationary carrier from which they emerge separately from each other at both ends of the carrier.

The invention permits the space requirement for accommodating the movable telescopes to be reduced to a carrier plane on each side of the vehicle. This furthermore saves considerable weight in the frame support, which has an advantageous effect on the total technical effort.

Sub A7 Preferably and with the features of claim 2, the movable and the stationary telescopes are congruent in their common carrier. This means that the clear profile of

SUB A7) the carrier corresponds to the outer cross sections of the movable telescopes, apart from the necessary clearance of motion. Depending on the design of the guide in the form of plain or roller bearings this results in carriers with a small space requirement.

SUB A8) According to a further advantageous embodiment of the invention rendered in claim 3, the carriers of the stationary telescopes are congruent on both sides of the vehicle. This means that the space requirement for the stationary telescopes is the same on both sides of the vehicle, which furthermore simplifies the technical effort for the carriers since they match each other in their essential dimensions.

The stationary telescopes and thus the carriers provided for their realization preferably extend in an arc shape, namely in curvatures whose radii are equal on each of the two sides of the vehicle. This permits the congruence of the carriers on both sides of the vehicle if they extend in an arc shape.

SUB A9 B2 These embodiments of the invention rendered in claims 3 and 4 are not necessary for its realization, however. The invention instead allows the telescope jibs to be disposed and designed in accordance with the requirements of the individual case. According to claim 5 the movable telescopes of at least one, but preferably both, sides of the vehicle therefore have different curvatures and the carriers have a corresponding curvature for each telescope. Such a design of the frame support permits different spans on the front and back frame supports and thus a better adaptation of the frame support to the tilting moments dependent on the mast.

SUB A10) For this purpose one can also use the features of claim 6 since it stipulates that at least one of the two stationary telescopes disposed in a carrier is lined out, i.e. extends in a straight line.

Details, further features and other advantages of the invention will result from the following description of an embodiment with reference to the figures in the drawing, in which

Fig. 1 shows a vehicle in plan view with extended telescopes, and

Fig. 2 shows the object of Fig. 1 with retracted telescopes in a side view.

SUB A11)

SUB A12) Vehicle 1 has superstructure 2 having swiveling mast 3 on slewing gear 4 behind cab 5 of truck undercarriage 6 and a frame support designated in general as 7 in

SUB A12> Fig. 1. The mast is divided with the aid of operating joints into three sections 7, 8 and 9 and supported at 10 for the journey on an auxiliary frame not shown in detail. The superstructure furthermore includes concrete pump 11 whose feeding hopper 12 is disposed behind mast support 10.

Frame support 70 is effected with the aid of jibs disposed on each side of the long side of the vehicle and executed as movable telescopes 14 to 17. At the free ends of each of these telescopes there is vertical support 18 to 21 which is in turn of telescopic design and carries baseplate 22 on its movable inside telescope.

The extended telescopes are shown by dash-dot lines in Fig. 1. Telescopes 15 and 16 form a front frame support, while telescopes 14 and 17 realize the back frame support, all telescopes being formed in an arc shape in this embodiment. Each telescope includes a stationary telescope. These parts of the frame support are designated as 23 to 26 in Fig. 1.

In the embodiment the stationary telescopes as well as the movable telescopes are executed in an arc shape. The arrangement is selected so that stationary telescopes 23 to 26 are disposed in an arc tangentially to the longitudinal direction of the vehicle and extend in each case from one of the long sides of the vehicle profile inward substantially as far as the middle of the vehicle and then on to the same long side of the vehicle profile. This is to be understood to mean that the two longitudinal members 270 and 280 usually forming the vehicle chassis are disposed between the apexes of the arcs of stationary telescopes 23, 24 and 26, 25.

SUB A13> Stationary telescopes 23, 24 and 25, 26 of front and back movable telescopes 14, 15 and 17, 16 of each long side of the vehicle are realized with common carrier 27, 28. The telescopes associated with each side of the vehicle are disposed one behind the other in these carriers and emerge from ends 29, 30 and 31, 32 of carriers 27, 28 associated therewith. Consequently, fully retracted movable telescopes 14, 15 and 16, 17 do not exceed the vehicle profile in the horizontal so that no excess widths of the vehicle result in the driving mode. Furthermore, the space between chassis members 270 and 280 and the long side of the vehicle is utilized in the perpendicular only in the carrier plane, thereby ensuring economy of space.

SUB A14) In the embodiment the movable and stationary telescopes are congruent with their common carrier 27, 28. For carriers 27 and 28 this results in an inside cross section reduced to the necessary measure. Furthermore, carriers 27, 28 of stationary telescopes 23 to 26 are congruent on both sides of the vehicle. This results in equal spans on both sides of the vehicle with the telescopes fully extended.

The arcs of stationary telescopes 23 to 26 are curved according to equal radii, and carriers 27 and 28 extends according to these equal radii of curvature. This results in a mirror-symmetric arrangement with respect to the center plane of the vehicle, which also has an advantageous effect on the weight counterbalance about the center axis of the vehicle since it improves the roadability.

Deviating from the shown embodiment, movable telescopes 14, 15 and 16, 17 can also have different curvatures on at least one side of the vehicle, which results in carriers 27, 28 having a different curvature for each of the telescopes. This makes it possible to select the spans of the front and back frame supports differently in accordance with the requirements of an individual case.

SUB A15) Likewise deviating from the shown embodiment, at least one of the two stationary telescopes 23 to 26 disposed in carrier 27, 28 can be lined out. This permits the particular front or back frame support to be shifted further forward or backward on one or both sides in order to take better account of a given individual case.

Consequently, each of these embodiments permits extensive adaptation to the requirements of the individual case, while retaining the main advantage that little space is required on each side of the middle of the vehicle in the vehicle profile, i.e. clearance of the vehicle.